

## Topsoil - Our Finest Resource

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Nova Scotia farmers are under great pressure due to inconsistent profit margins to sell off agricultural land and topsoil for short-term benefit. It is critical that when long term cash flow problems occur, that farmers and politicians recognize the need for agricultural land protection strategies to sustain local food production and offer other financial stability or exit opportunities.

Healthy topsoil is a key to crop production. Topsoil provides the ecosystem for biological activity, water and nutrient retention; plus the pore space for aeration, soil drainage and root elongation. We cannot remove topsoil and replace it with structure less subsoil that has been amended by fertility or organic matter additions. Nor should we allow contractors to push aside topsoil, remove subsoil or reposition the topsoil afterwards due to the physical damage to pore space continuity and overall structure. There are difficulties in monitoring these situations.

The “**Conservation Tillage Handbook**” (US Pacific Northwest Extension Group) indicates that .... *“Loss of topsoil from cropland alters nutrient supply and distribution, water storage potential, physical properties of the seedbed and root environment. Growers are well aware of the reduced crop yields where all of the topsoil has been eroded, exposing less productive clayey or calcareous subsoil. Yields from these eroded areas are often less than one-half or one-third of the yields where most of the original topsoil still remains.”*

It’s clear that subsoil is not a viable alternative to topsoil. Most of the subsoil in Nova Scotia tends to be acidic clays or sands (gravels) that are either extremely dense, infertile or have poor water/nutrient holding capabilities which are required for optimum crop growth.

A report “**Soil Erosion and Yield Uncertainty in the Soil Conservation Decision**” (US Agricultural Economics Research Report, No. 45) pointed out that an upper limit of “acceptable” soil loss is 5 tons per acre per year, which still permits a high level of crop productivity to be economically sustained for an indefinite period.

To put topsoil removal into context in relation to this “acceptable” annual soil loss, consider that most topsoil removal activities take 3 – 6 inches of the best soil which translates to about 500 – 1000 tons per acre. This 500 – 1000 ton figure is calculated from a universally accepted term called an acre-furrow slice. The acre-furrow slice contains 2 million lbs. (1000 tons) of soil and is the weight of topsoil to a 6 – 7 inch depth, found in an acre of land.

A serious annual erosion loss of 5 ton/acre/year on sloping vegetable land would remove 4/100<sup>ths</sup> of an inch (1 mm) of topsoil. If adequate government legislation is not established, then the business of topsoil removal can remove more fertile soil than 50 to 100 years of soil erosion that can occur with the most erosive vegetable production systems. In forage and grain production, there is usually minimal to no soil erosion.

As population growth continues and housing development increases, there will be greater demand for landscape quality soil. Options should be explored which will identify alternative

sources for this topsoil, including soil manufactured from a mixture of quarried sand, chopped straw, composted manures and organic 'green bin' wastes.

It is vital that both farm and government organizations address the protection of topsoil for future generations and that we all become more responsible land stewards.

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